

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

SHIVA P. SINGEETHAM
JON BUCK
ASHLEY OATMAN

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Examiner: Aaron M. Dunwoody

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For: HYDRAULIC CONNECTOR

REVISED APPEAL BRIEF

Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicants hereby submit this Appeal Brief to the Board of Patent Appeals and Interferences in response to the Final Office Action dated September 6, 2007. The Notice of Appeal was filed on November 26, 2007.

No fees are believed to be due in connection with this Revised Appeal Brief. However, should any fees under 37 C.F.R. §§ 1.16 to 1.21 be required for any reason relating to this document, the Director is authorized to deduct such fees from Williams, Morgan & Amerson, P.C. Deposit Account No. 50-0786/2065.001900.

I. REAL PARTY IN INTEREST

The present application is owned by FMC Technologies, Inc.

II. RELATED APPEALS AND INTERFERENCES

Applicants are not aware of any related appeals and/or interferences that might affect the outcome of this proceeding.

III. STATUS OF THE CLAIMS

Claims 1-69 were originally filed with the application. Claims 70-73 were added and claims 10, 24 and 37 were canceled in Applicants' Response to Final Office Action Dated May 26, 2006 filed July 12, 2006. Claims 1-9, 11-23, 25-36 and 38-73 are at issue in this appeal and they are attached as Appendix A. Claims 1-9, 11-23, 25-36 and 38-73 were rejected in the Final Office Action issued on September 6, 2007. Claims 1-9, 11-23, 25-36 and 38-73 are the subject of the present appeal.

IV. STATUS OF AMENDMENTS

No amendments to the claims have been filed subsequent to the Final Office Action.

V. SUMMARY OF CLAIMED SUBJECT MATTER

In general, the present invention is directed to an improved hydraulic connector that may be employed to connect various components together, *e.g.*, a wellhead, a riser or a flowline. There are five independent claims at issue in the current appeal: claims 1, 18, 32, 46 and 57.

Independent claim 1 is generally directed to a connector 10 that includes a first end adapted to be coupled to a first component 40, a plurality of locking segments 8 that, when actuated, are adapted to secure the first component 40 to a second component 30, wherein each of the plurality of locking segments 8 includes a first primary locking shoulder 50 that is adapted to engage a first surface 42a on the first component 40 and a second primary locking shoulder 52 that is adapted to engage a second surface 32a on the second component 30, and a locking

mandrel 3 that, when actuated, is adapted to engage each of the plurality of locking segments 8 at at least three discrete, spaced apart engagement areas 45, 47, 49. This invention is generally described throughout the specification. By way of example only, at least portions of the invention are described at page 7, line 9 – page 13, line 12; Figures 1A-1B and 2A-2D.

Independent claim 18 is generally directed to a connector 10 that includes a first end adapted to be coupled to a first component 40, a plurality of locking segments 8 that, when actuated, are adapted to secure the first component 40 to a second component 30, wherein each of the plurality of locking segments 8 includes a first primary locking shoulder 50 that is adapted to engage a first surface 42a on the first component 40 and a second primary locking shoulder 52 that is adapted to engage a second surface 32a on the second component 30, and a locking mandrel 3 that, when actuated, is adapted to engage each of the plurality of locking segments 8 at at least two discrete, spaced apart substantially flat engagement areas (could be any two of 45, 47, 49), wherein the substantially flat engagement surfaces are substantially parallel to an axis of the first and second components 40, 30 when mated. This invention is generally described throughout the specification. By way of example only, at least portions of the invention are described at page 7, line 9 – page 13, line 12; Figures 1A-1B and 2A-2D.

Independent claim 32 is generally directed to a connector 10 that includes a first end adapted to be coupled to a first component 40, a plurality of locking segments 8 that, when actuated, are adapted to secure the first component 40 to a second component 30, wherein each of the plurality of locking segments 8 includes a first primary locking shoulder 50 that is adapted to engage a first surface 42a on the first component 40 and a second primary locking shoulder 52 that is adapted to engage a second surface 32a on the second component 30, and a locking mandrel 3 that, when actuated, is adapted to engage each of the plurality of locking segments 8 at

three discrete, spaced apart, substantially flat engagement areas 45, 47, 49. This invention is generally described throughout the specification. By way of example only, at least portions of the invention are described at page 7, line 9 – page 13, line 12; Figures 1A-1B and 2A-2D.

Independent claim 46 is generally directed to a connector 10 that includes a first end adapted to be coupled to a first component 40, a plurality of locking segments 8 that, when actuated, are adapted to secure the first component 40 to a second component 30, wherein each of the plurality of locking segments 8 includes a first primary locking shoulder 50 that is adapted to engage a first surface 42a on the first component 40 and a second primary locking shoulder 52 that is adapted to engage a second surface 32a on the second component 30, and a locking mandrel 3 that, when actuated, is adapted to engage each of the plurality of locking segments 8 at three discrete, spaced apart, substantially flat engagement areas 45, 47, 49.¹ This invention is generally described throughout the specification. By way of example only, at least portions of the invention are described at page 7, line 9 – page 13, line 12; Figures 1A-1B and 2A-2D.

Independent claim 57 is generally directed to a connector 10 that includes a first end adapted to be coupled to a first component 40, a plurality of means 8 for securing the first component 40 to a second component 30, each of the means 8 for securing including a first primary locking shoulder 50 that is adapted to engage a first surface 42a on the first component 40 and a second primary locking shoulder 52 that is adapted to engage a second surface 32a on the second component 30, and means 3 for engaging each of the means 8 for securing the first component 40 to the second component 30 at at least three discrete, spaced apart engagement areas 45, 47, 49. This invention is generally described throughout the specification. By way of

¹ During the course of prosecution, independent claim 32 was amended such that, in its present form, claim 32 is identical to claim 46. Upon successful completion of this appeal, Applicants will propose amending claim 32 to make it narrower than claim 46, or vice versa.

example only, at least portions of the invention are described at page 7, line 9 – page 13, line 12; Figures 1A-1B and 2A-2D.

Dependent claims 11, 25, 39 and 51 are also at issue in this appeal, and they all contain similar limitations. For example, claim 11 further limits claim 1 by reciting that each of the plurality of locking segments 8 further comprises a first secondary shoulder 54 on the locking segment 8 that is adapted to engage a first secondary shoulder 44 on the first component 40, and a second secondary shoulder 56 on the locking segment 8 that is adapted to engage a second secondary shoulder 34 on the second component 30. Support for the limitations in claims 11, 25, 39 and 51 may be found at, for example, page 8, line 14 – page 11, line 10; Figures 2A-2D.

Dependent claims 16, 30, 44, 56 and 61 are also at issue in this appeal, and they all contain similar limitations. For example, claim 16 further limits claim 1 by reciting that the locking mandrel 3 is operatively coupled to a primary piston 1. Support for the limitations in claims 16, 30, 44, 56 and 61 may be found at, for example, page 8, line 14 – page 11, line 10; Figures 2A-2D.

Dependent claims 17, 31, 45 and 62 are also at issue in this appeal, and they all contain similar limitations. For example, claim 17 further limits claim 16 by further requiring a secondary release piston 6 positioned below the primary piston 1 that is adapted to, when actuated, cause the primary piston 1 to move. Support for the limitations in claims 17, 31, 45 and 62 may be found at, for example, page 8, line 14 – page 11, line 10; Figures 2A-2D.

Dependent claims 70-73 are also at issue in this appeal, and they all contain similar limitations. For example, claim 70 further limits claim 16 by reciting that the primary piston 1 is positioned within a body 7 of the connector 10. Support for the limitations in claims 70-73 may be found at, for example, page 8, line 14 – page 11, line 10; Figures 2A-2D.

VI. GROUND S OF REJECTION TO BE REVIEWED ON APPEAL

1. Claims 1-9, 11-23, 25-36 and 38-73 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Cuiper (U.S. Patent No. 4,699,215).

VII. ARGUMENT

A. Legal Standards

As the Board well knows, an anticipating reference by definition must disclose every limitation of the rejected claim in the same relationship to one another as set forth in the claim. *In re Bond*, 15 U.S.P.Q.2d 1566, 1567 (Fed. Cir. 1990). To the extent the Examiner relies on principles of inherency in making the anticipation rejections in the Office Action, inherency requires that the asserted proposition necessarily flow from the disclosure. *In re Oelrich*, 212 U.S.P.Q. 323, 326 (C.C.P.A. 1981); *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1463-64 (Bd. Pat. App. & Int. 1990); *Ex parte Skinner*, 2 U.S.P.Q.2d 1788, 1789 (Bd. Pat. App. & Int. 1987); *In re King*, 231 U.S.P.Q. 136, 138 (Fed. Cir. 1986). It is not enough that a reference could have, should have, or would have been used as the claimed invention. “The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *Oelrich*, at 326, quoting *Hansgirk v. Kemmer*, 40 U.S.P.Q. 665, 667 (C.C.P.A. 1939); *In re Rijckaert*, 28 U.S.P.Q.2d 1955, 1957 (Fed. Cir. 1993), quoting *Oelrich*, at 326; see also *Skinner*, at 1789. “Inherency ... may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *Skinner*, at 1789, citing *Oelrich*. Where anticipation is found through inherency, the Office’s burden of establishing prima facie anticipation includes the burden of providing “...some evidence or scientific reasoning to establish the reasonableness of the examiner’s belief that the functional limitation is an inherent characteristic of the prior art.” *Skinner* at 1789.

B. The Examiner Erred in Rejecting Claims 1-9, 11-23, 25-36 and 38-73

It is respectfully submitted that the Examiner erred in rejecting the claims 1-9, 11-23, 25-36 and 38-73 based upon Cuiper.

1. The Examiner Erred by Ignoring the Express Claim Language

As an initial matter, the Examiner erred by not giving any patentable weight to some of the express language in the claims. More specifically, the Examiner erred by ignoring the use of the “adapted to” language in the claims. For example, claim 1 recites a connector, comprising a first end adapted to be coupled to a first component, a plurality of locking segments that, when actuated, are adapted to secure the first component to a second component, wherein each of the plurality of locking segments comprises a first primary locking shoulder that is adapted to engage a first surface on the first component and a second primary locking shoulder that is adapted to engage a second surface on the second component, and a locking mandrel that, when actuated, is adapted to engage each of the plurality of locking segments at at least three discrete, spaced apart engagement areas.

The use of “adapted to” language was specifically approved by the Board of Patent Appeals and Interferences in an appeal taken in the application that resulted in U.S. Patent No. 6,666,754. In the appeal of that case, the Board of Patent Appeals and Interferences did not sustain the Examiner’s rejection under 35 U.S.C. § 112 for the use of the terminology “adapted to” in the claims at issue in that case. Decision on Appeal dated April 25, 2003. More specifically, in that case, the Examiner’s rationale for the Section 112 rejection was as follows:

“The use of the terminology ‘adapted to’ makes the claim vague and indefinite because the scope of the claims cannot be ascertained, since it has been held the recitation that an element is ‘adapted to’ perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 U.S.P.Q. 138.

Decision on Appeal, p. 4. In reversing the Examiner's claim rejections under 35 U.S.C. § 112, the Board noted:

“The use of the terminology ‘adapted to’ in claim 21 does not render claims 21-32 vague and indefinite since the scope of the claim can be ascertained. As set forth by the Examiner, the recitation that an element is ‘adapted to’ perform a function is a limitation which requires only that the structure be able to perform the function. As such, the scope of the claims can be ascertained with a reasonable degree of precision and predictability.

Decision on Appeal, pp. 4-5. The use of “adapted to” language is also supported by the statements of the Board of Patent Appeals and Interferences in *Ex Parte Robert-A. Ollar*, 1994 WL 1687107, Bd. Pat .App & Interf., 1994, which states:

“On the other hand, we are aware of support for a holding that ‘adapted to’ and ‘whereby’ clauses in claims further limit the claimed subject matter and should not be disregarded. For example, see *In re Venezia*, 530 F.2d 956, 958-59, 189 U.S.P.Q. 149, 151-52 (CCPA 1976). *Pac-Tec Inc. v. Amerace Corp.*, 903 F.2d 796, 801, 14 U.S.P.Q.2d 1871, 1876 (Fed. Cir. 1990) recognizes (emphasis added) that: ... by deleting the preamble and all limitations that include ‘adapted to,’ ‘whereby,’ and ‘thereby’ ... the claims are reduced to mere collections of parts.”

Moreover, it is interesting to note that the Examiner previously recognized that the “adapted to” limitations are positively recited limitations that must be considered. The “adapted to” limitations have been in the application since it was originally filed. In an Office Action dated May 25, 2006, the Examiner rejected the pending claims based upon Pallini (U.S. Patent Publication No. 2001/0045286). In doing so, the Examiner specifically identified structures in Pallini (items 15 and 13) that correspond to the “first” and “second” components, respectively, recited in the claims. Obviously, at that time, the Examiner considered the “adapted to” limitations to be positively recited limitations of the claims, otherwise he would not have found it necessary to identify the structures in Pallini that correspond to the “first” and “second” components in the pending claims. The rejection based upon Pallini was subsequently

overcome. The Examiner never raised the issue of not giving patentable weight to the “adapted to” limitations until the Final Office Action that is the subject of the present appeal.

In view of the foregoing, it is respectfully submitted that the Examiner erred by ignoring the express limitations associated with the “adapted to” language in the pending claims. The scope of the claims containing such limitations is readily understandable, and they must be considered as positively recited limitations.

2. The Examiner Did Not Identify Specific Structures in Cuiper That Allegedly Anticipate the Pending Claims

In many cases, the Examiner did not even attempt to identify specific structures in Cuiper that supposedly correspond to the limitations set forth in the pending claims. For example, in the Response to Office Action Dated February 27, 2007, Applicants specifically noted that the Examiner did not specifically identify the “first component” and “second component” in Cuiper. Response to Office Action Dated February 27, 2007, p. 3, ¶¶3-4. In the subsequent Final Office Action, the Examiner again did not specifically identify what structure the Examiner contends is the “first component” and the “second component” in Cuiper. Rather, the Examiner merely recited that the first and second components are not part of the claimed invention. Final Office Action, p. 3.

The Examiner is correct that the “first” and “second” components are not part of the claimed invention, but, as discussed above, it is legal error to ignore the express claim language that requires the claimed connector be adapted to engage the first and second components, as recited in the claims. Of course, to properly reject the pending claims, the Examiner must identify a connector in the prior art that meets the limitations set forth in the claims. The Examiner erred because he chose to ignore the express limitations in the claims and/or because

the Examiner did not specifically identify the “first” and “second” components allegedly disclosed in Cuiper.

In fact, in the Final Office Action, the Examiner specifically identified very few structures in Cuiper that allegedly correspond to certain limitations pending in the claims. More specifically, the Examiner asserted that item 41 in Cuiper corresponds to the claimed “locking segments” and items 25, 35 and 51 in Cuiper correspond to the claimed “locking mandrel.” Final Office Action, pp. 2-3. The Examiner also identified the surfaces 47 in Cuiper as the claimed first and second primary locking shoulders, and item 55 in Cuiper as a “primary piston.” Final Office Action, p. 3. Other than the aforementioned attempts at specificity, the Examiner did not specifically identify any other structure in Cuiper that corresponds to the limitations of the pending claims. Rather, the Examiner merely relied on conclusory statements that merely regurgitate portions of the claim language to support the anticipation rejection or ignored the limitations altogether.

For example, with respect to dependent claims 11, 25, 39 and 51, at no point did the Examiner even attempt to identify any structure in Cuiper that allegedly corresponds to the expressly recited limitations associated with the locking segments – first and second secondary shoulders on the locking segments and first and second secondary shoulders on the first and second components, respectively. With respect to dependent claim 17, the Examiner never even attempted to identify any structure in Cuiper that allegedly corresponds to the claimed secondary release piston.

3. The Cuiper Reference – Correctly Understood – Is Very Far Afield From the Inventions Set Forth in the Pending Claims

Cuiper is directed to a connector or device for connecting a riser 17 to a wellhead housing 11. Abstract. More specifically, Cuiper is concerned with providing a subsea connector that

does not involve the use of a hydraulic system to actuate the connector. Col. 1, ll. 34-40, 56-59. The connector in Cuiper comprises a plurality of dogs 41 that are carried in the connector body 15. Each of the dogs 41 has grooves 47 formed thereon to mate with grooves 13 formed on the wellhead housing 11. Springs 45 urge the dogs 41 inwardly and downwardly to lock the connector body 15 to the wellhead housing 11. Abstract; Col. 2, l. 28 – Col. 3, l. 49. Figures 1-3 depict the connector in the engaged position, while Figure 4 depicts the connector in the release position. Col. 2, ll. 50-57.

Each dog 41 is a segment of a cylinder. Col. 3, l. 29. The dogs 41 move relative to their backup segments 35 between an inner engaged position (Figure 3) and an outer retracted position (Figure 4). Col. 3, ll. 37-39. Springs 45 (see Figures 3, 4 and 9) urge the dogs 41 to the inner engaged position. Col. 3, ll. 43-44.

Figures 5-9 of Cuiper depict an indicator means for indicating whether or not the dogs 41 are in the fully engaged position, and also for forcing them into the engaged position if they are not engaged. The means includes a threaded rod 49. There is a threaded rod for each dog 41. When the rod 49 is in its outer position, the knob 51 is spaced above a recess shoulder 53. If the knob 51 is rotated to move the rod 49 to the inner position, shown in Figure 8, the knob 51 will contact the recess shoulder 53. Col. 3, ll. 50-62. A plunger 55 extends reciprocally through the rod 49. A spring 57 urges the plunger 55 inwardly. The plunger 55 contacts the back of the dog 41. Col. 3, ll. 63-67.

In operation, the riser 17 (Figure 1) is lowered into the sea over the wellhead housing 11. As the connector body 15 is lowered over the wellhead housing 11, the grooves 47 of the dogs 41 will contact the wellhead housing grooves 13. This causes the dogs 41 to retract. When the connector body 15 has fully seated on the wellhead housing 11, as shown in Figure 3, the dogs

41 are urged to the inner extended or engaged position by the springs 45. This locks the connector body 15 to the wellhead housing 11. The dogs 41 will prevent the connector body 15 from moving upward relative to the wellhead housing 11 under upward tension.

With reference to Figures 5-9, while the connector body 15 is being lowered, the plunger 55 is in contact with the back of the dog 41. The plunger 55 is sized so that when the dog 41 is in its retracted or disengaged position, as shown in Figure 5, the upper end of the plunger 55 will protrude beyond the knob 51. Once the dog 41 moves into engagement with the grooves 13, as shown in Figure 6, the plunger spring 57 pushes the plunger 55 further downward and inward. With the dogs 41 in this engaged position, as shown in Figure 6, the outer end of the plunger 55 is flush with the threaded rod 49. A diver can inspect the connector body 15 and determine visibly whether or not all of the plungers 55 are flush with the knobs 51.

If one or more of the dogs 41 do not fully engage the grooves 13 on the wellhead, as shown in Figure 7, the plunger 55 will protrude some distance beyond the upper end of the knob 51. The diver, upon seeing this condition, then rotates the knob 51. Rotation of the knob 51 causes the lower end of the threaded rod 49 to push against the dog 41, forcing it into engagement with the grooves 13. When the knob 51 contacts the recess shoulder 53, the dog 41 is fully engaged with the grooves 13.

Normally, connector body 15 in Cuiper will be connected to well housing 11 for a long duration, perhaps several years. At some point, it may become necessary to release the connector body 15 and pull it upwardly from the wellhead housing 11. To do this, a diver proceeds to the connector body 15 and rotates the locking pin 27 to retract it from the groove 29. Then, at the surface, the vessel will lift the riser 17. The connector body 15 is free to move upwardly relative to the slide housing 25, the backup segments 35 and the dogs 41.

4. The Examiner's Rejection of All Independent Claims is Simply Without Merit

Respectfully, there are many errors in the Examiner's rejections.

First, it is clear that the Examiner identified item 41 in Cuiper as the "locking segments," and that the Examiner believed that the items 25, 35, 51 constitute the "locking mandrel" as recited in the claims. Final Office Action, p. 2. The applied reference – Cuiper – defines these items as a sliding housing 25 (Col. 2, ll. 48-49), a backup segment 35 (Col. 3, l. 1), and a knob 51 (Col. 3, ll. 55-57). It is unclear how the Examiner could consider the knob 51 to be a "locking mandrel" as recited in the claims. The Examiner also identified item 55 in Cuiper as the "primary piston" recited in several dependent claims, *e.g.*, claims 16, 30, 44, 56 and 61. Cuiper identifies item 55 as a plunger that is part of the indicator means used in the connector disclosed in Cuiper.

Other than the specifics mentioned above, it is unclear what structure the Examiner relied upon in Cuiper for rejecting the pending claims. For example, as discussed above, the Examiner never specifically identified what items or structures in Cuiper he considers to correspond to the "first component" and the "second component." Respectfully, having failed to properly identify the claimed first and second components may have led the Examiner to a misapplication of the Cuiper reference.

Obviously, the connector in Cuiper is item 15. Claim 1 requires that a first end of the connector is adapted to be coupled to the "first component." It is believed that the only possible structure that might meet this "first component" limitation in Cuiper is the riser 17. It should be noted that the connector 15 in Cuiper is coupled to the riser 17 by a threaded connection by bolts 19. See Figure 1. Presumably, the Examiner believed that the "second component" in Cuiper was the wellhead 11.

With this understanding, Cuiper does not disclose many limitations set forth in the pending claims. Among other things, claim 1 recites that each of the locking segments has a first primary locking shoulder for engaging the first component **and** a second primary locking shoulder for engaging the second component. This basic structure is simply not present in Cuiper. As understood by the undersigned, at no point do the “locking segments” 41 in Cuiper (as identified by the Examiner) ever engage the first component – the riser 17. It is not even clear that the connector 15 described in Cuiper could be modified so as to meet this express claim limitation. In any event, it is clear that each of the “locking segments” 41 (identified by the Examiner) do not have primary locking shoulders that are adapted to engage **BOTH** the first and second components as recited in the claims. For at least this reason, the Examiner’s anticipation rejection of all pending claims was erroneous. The above arguments apply equally with respect to all pending independent claims.

The Examiner’s contention that the three components 25 (housing), 35 (backup segment) and 51 (knob) in Cuiper constitute a locking mandrel as recited in the claims is simply not credible. Based upon the aforementioned disclosure in Cuiper, the knob 51 is only intended to be used if, for some reason, the dogs 41 do not engage the grooves 13 during normal installation procedures. Moreover, all of the claims at issue recite that the locking mandrel, when actuated, is adapted to engage **EACH** of the plurality of locking segments at three spaced apart locations – the mandrel engages multiple locking segments. In Cuiper, “there is a threaded rod 49 for each dog 41” (Col. 3, l. 55) – a one-to-one correspondence. Thus, assuming for purposes of argument only, that the Examiner’s interpretation of Cuiper is correct, Cuiper still does not disclose or suggest **a** locking mandrel that, when actuated, engages a plurality of locking segments. In Cuiper, the rod 49 only engages a single locking element – not a plurality of locking elements as

required by the claims. If for no other reason, the foregoing clearly establishes that the Examiner's rejection of all pending claims as allegedly being anticipated based upon Cuiper was clearly erroneous.

In summary, Cuiper is very far afield from the inventions set forth in the pending claims. Among other things, claim 1 (and the other pending independent claims) recites that each of the locking segments has a first primary locking shoulder that is **adapted to engage** the first component **and** a second primary locking shoulder that is **adapted to engage** the second component. This basic structure is not present in Cuiper. As understood by the undersigned, at no point do the locking segments 41 (as identified by the Examiner) ever engage the as yet unidentified "first component" – perhaps it is the riser 17. It is not even clear that the connector 15 described in Cuiper could be modified so as to meet this express claim limitation. In any event, it is clear that each of the locking segments 41 (identified by the Examiner) do not have locking shoulders that are **adapted to engage BOTH** the first and second components as recited in the claims.

For the aforementioned reasons, the Examiner's anticipation rejection of all pending claims was erroneous and should be REVERSED.

C. The Examiner Erred in Rejecting Independent Claim 18

The last clause of independent claim 18 recites that the connector comprises "a locking mandrel that, when actuated, is adapted to engage each of said plurality of locking segments at at least two discrete, spaced apart substantially flat engagement areas, wherein said substantially flat engagement surfaces are substantially parallel to an axis of said first and second components when mated." It is respectfully submitted that the prior art of record does not disclose a connector that includes this limitation, in addition to the other limitations expressly recited in

claim 18. At no point does Cuiper disclose or suggest the detailed structure of substantially flat engagement areas that are substantially parallel to the axis of the first and second components. This structure is not disclosed in Cuiper.

For at least this additional reason, the Examiner erred in rejecting independent claim 18, and all claims depending therefrom.

D. The Examiner Erred in Rejecting Dependent Claims 11, 25, 39 and 51

Dependent claim 11 further limits claim 1 by reciting that each of the plurality of locking segments 8 further comprises a first secondary shoulder 54 on the locking segment 8 that is adapted to engage a first secondary shoulder 44 on the first component 40 and a second secondary shoulder 56 on the locking segment 8 that is adapted to engage a second secondary shoulder 34 on the second component 30. See, *e.g.*, Figure 2A. Similar limitations are contained in dependent claims 25, 39 and 51.

Applicants respectfully submit that the Examiner again chose to simply ignore the remainder of the claim language in claim 11 – the language that expressly recites that each of these first and second secondary shoulders are adapted to engage first and second shoulders, respectively, on the first and second components, respectively. Respectfully, there does not appear to be any structure in Cuiper that could even be argued to be the secondary shoulders that are adapted to engage the corresponding shoulders on the first and second components as recited in dependent claim 11. This argument applies equally to dependent claims 25, 39 and 51 as well.

The Examiner's rejection of dependent claims 11, 25, 39 and 51 was erroneous and should be REVERSED.

E. The Examiner Erred in Rejecting Dependent Claims 16, 30, 44, 56 and 61

Dependent claim 16 further limits claim 1 by reciting that the locking mandrel 3 is operatively coupled to a primary piston 1. Similar limitations are set forth in dependent claims 30, 44, 56 and 61. The Examiner contends that the plunger 55 in Cuiper corresponds to a primary piston as recited in claim 16. Respectfully, Cuiper does not disclose or suggest such a structure. In fact, Cuiper teaches away from the use of such a hydraulic actuator or piston in the connector disclosed therein. See, *e.g.*, Col. 1, ll. 36-41 and 56-62.

The plunger 55 in Cuiper is a spring-biased member that is used to determine whether or not the dogs 41 are fully engaged in the grooves 13. Col. 3, ll. 50-65; Col. 4, ll. 25-50. The plunger 55 extends reciprocally through the threaded rod 49. The plunger 55 is urged inwardly toward the wellhead housing by a spring 54. If the dogs 41 properly engage the grooves 13, the spring 57 pushes the plunger 55 inward until such time as it is flush with the outer surface of the knob 51, as indicated in Figure 6. If the dogs 41 do not fully engage the grooves 13, the plunger 55 will protrude some distance beyond the upper end of the knob 51, as shown in Figure 7. The diver, upon seeing the condition reflected in Figure 7, can rotate the knob 51 which causes the lower end of the threaded rod 49 to push against the dog 41. When the knob 51 contacts the recess shoulder 53, the dog 41 will be fully engaged with the grooves 13.

As thus understood, it is clear that the spring-biased plunger 55 in Cuiper is not a piston at all – much less a primary piston as asserted by the Examiner. The plunger 55 is part of “an indicator means for indicating whether or not the dogs 41 are in the fully engaged position, and also for forcing them into the engaged position if not.” Col. 3, ll. 50-53.

The Examiner’s rejection of dependent claims 16, 30, 44, 56 and 61 was erroneous and should be REVERSED.

F. The Examiner Erred in Rejecting Dependent Claims 17, 31, 45 and 62

Dependent claim 17 further limits dependent claim 16 by reciting that the connector comprises a secondary release piston 6 for use in moving the primary piston 1 recited in claim 16. This argument applies equally with respect to dependent claims 31, 45 and 62.

At no point did the Examiner ever even attempt to identify what structure in Cuiper allegedly corresponds to the claimed secondary release piston. Thus, the anticipation rejection fails as a matter of law. Suffice it to say that, as understood by the undersigned, Cuiper does not disclose any structure that would correspond to the claimed secondary release piston. In fact, as noted above, Cuiper specifically teaches away from the use of a hydraulic system with his connector.

The Examiner's rejection of dependent claims 17, 31, 45 and 62 was erroneous and should be REVERSED.

G. The Examiner Erred in Rejecting Dependent Claims 70-73

Claim 70 further limits claim 16 by reciting that the primary piston 4 is positioned within a body 7 of the connector. This argument applies to dependent claims 71-73 as well.

As set forth above, the Examiner's contention that the plunger 55 in Cuiper corresponds to the claimed primary piston is simply without merit. Accordingly, the rejection of these dependent claims is equally without merit.

For all of the aforementioned reasons, the Examiner's rejection of dependent claims 70-73 was erroneous and should be REVERSED.

VIII. CLAIMS APPENDIX

The claims that are the subject of the present appeal – claims 1-9, 11-23, 25-36 and 38-73 – are set forth in the attached "Claims Appendix."

IX. EVIDENCE APPENDIX

Applicants do not rely upon any evidence as indicated on the attached Evidence Appendix.

X. RELATED PROCEEDINGS APPENDIX

There are no Related Proceedings for this appeal as indicated on the attached Related Proceedings Appendix.

XI. CONCLUSION

Accordingly, it is respectfully submitted that the Examiner erred in not allowing claims 1-9, 11-23, 25-36 and 38-73 over the prior art of record. Applicants respectfully request the Board reverse the Examiner's rejections. The undersigned attorney may be contacted at (713) 934-4055 with respect to any questions, comments or suggestions relating to this appeal.

Respectfully submitted,

WILLIAMS, MORGAN & AMERSON
CUSTOMER NO. 23720

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/J. Mike Amerson/

J. Mike Amerson
Reg. No. 35,426
10333 Richmond, Suite 1100
Houston, Texas 77042
(713) 934-4055
(713) 934-7011 (facsimile)

ATTORNEY FOR APPLICANT

CLAIMS APPENDIX

1. A connector, comprising:
 - a first end adapted to be coupled to a first component;
 - a plurality of locking segments that, when actuated, are adapted to secure said first component to a second component, wherein each of said plurality of locking segments comprises:
 - a first primary locking shoulder that is adapted to engage a first surface on said first component; and
 - a second primary locking shoulder that is adapted to engage a second surface on said second component; and
 - a locking mandrel that, when actuated, is adapted to engage each of said plurality of locking segments at at least three discrete, spaced apart engagement areas.
2. The connector of claim 1, wherein at least one of said engagement areas is a substantially flat engagement area defined by the engagement of substantially flat surfaces.
3. The connector of claim 1, wherein all of said engagement areas are substantially flat engagement areas defined by the engagement of substantially flat surfaces.
4. The connector of claim 1, wherein at least one of said engagement areas is a tapered engagement area defined by the engagement of tapered surfaces.

5. The connector of claim 1, wherein all of said engagement areas are tapered engagement areas defined by the engagement of tapered surfaces.

6. The connector of claim 1, wherein said first end is threadingly coupled to said first component.

7. The connector of claim 1, wherein said first component is comprised of at least one of a blowout preventer, a riser, a production tree, a tubing head and a running tool.

8. The connector of claim 1, wherein said second component is comprised of at least one of a blowout preventer, a riser, a production tree, a tubing head and a running tool.

9. The connector of claim 1, further comprising at least one indicator rod that is operatively coupled to said locking mandrel and adapted to indicate a position of said locking mandrel.

11. The connector of claim 1, wherein each of said plurality of locking segments further comprises:

a first secondary shoulder on said locking segment that is adapted to engage a first secondary shoulder on said first component; and

a second secondary shoulder on said locking segment that is adapted to engage a second secondary shoulder on said second component.

12. The connector of claim 1, wherein said first primary locking shoulder and said first surface on said first component are tapered surfaces.

13. The connector of claim 1, wherein said second primary locking shoulder and said second surface on said second component are tapered surfaces.

14. The connector of claim 1, wherein said locking mandrel comprises a plurality of recesses, each of which is adapted to receive a protrusion on said locking segments when said locking segments are in a disengaged position.

15. The connector of claim 1, wherein each of said locking segments is comprised of a downwardly facing surface that is adapted to engage an upwardly facing surface on said locking mandrel when said locking mandrel is actuated to disengage said connector.

16. The connector of claim 1, wherein said locking mandrel is operatively coupled to a primary piston.

17. The connector of claim 16, further comprising a secondary release piston positioned below said primary piston, said secondary release piston adapted to, when actuated, cause said primary piston to move.

18. A connector, comprising:
a first end adapted to be coupled to a first component;

a plurality of locking segments that, when actuated, are adapted to secure said first component to a second component, wherein each of said plurality of locking segments comprises:

a first primary locking shoulder that is adapted to engage a first surface on said first component; and

a second primary locking shoulder that is adapted to engage a second surface on said second component; and

a locking mandrel that, when actuated, is adapted to engage each of said plurality of locking segments at at least two discrete, spaced apart substantially flat engagement areas, wherein said substantially flat engagement surfaces are substantially parallel to an axis of said first and second components when mated.

19. The connector of claim 18, wherein said connector is engaged at at least three discrete, spaced apart substantially flat engagement areas.

20. The connector of claim 18, wherein said first end is threadingly coupled to said first component.

21. The connector of claim 18, wherein said first component is comprised of at least one of a blowout preventer, a riser, a production tree, a tubing head and a running tool.

22. The connector of claim 18, wherein said second component is comprised of at least one of a blowout preventer, a riser, a production tree, a tubing head and a running tool.

23. The connector of claim 18, further comprising at least one indicator rod that is operatively coupled to said locking mandrel and adapted to indicate a position of said locking mandrel.

25. The connector of claim 18, wherein each of said plurality of locking segments further comprises:

- a first secondary shoulder on said locking segment that is adapted to engage a first secondary shoulder on said first component; and
- a second secondary shoulder on said locking segment that is adapted to engage a second secondary shoulder on said second component.

26. The connector of claim 18, wherein said first primary locking shoulder and said first surface on said first component are tapered surfaces.

27. The connector of claim 18, wherein said second primary locking shoulder and said second surface on said second component are tapered surfaces.

28. The connector of claim 18, wherein said locking mandrel comprises a plurality of recesses, each of which is adapted to receive a protrusion on said locking segments when said locking segments are in a disengaged position.

29. The connector of claim 18, wherein each of said locking segments is comprised of a downwardly facing surface that is adapted to engage an upwardly facing surface on said locking mandrel when said locking mandrel is actuated to disengage said connector.

30. The connector of claim 18, wherein said locking mandrel is operatively coupled to a primary piston.

31. The connector of claim 30, further comprising a secondary release piston positioned below said primary piston, said secondary release piston adapted to, when actuated, cause said primary piston to move.

32. A connector, comprising:

a first end adapted to be coupled to a first component;

a plurality of locking segments that, when actuated, are adapted to secure said first component to a second component, wherein each of said plurality of locking segments comprises:

a first primary locking shoulder that is adapted to engage a first surface on said first component; and

a second primary locking shoulder that is adapted to engage a second surface on said second component; and

a locking mandrel that, when actuated, is adapted to engage each of said plurality of locking segments at three discrete, spaced apart, substantially flat engagement areas.

33. The connector of claim 32, wherein said first end is threadingly coupled to said first component.

34. The connector of claim 32, wherein said first component is comprised of at least one of a blowout preventer, a riser, a production tree, a tubing head and a running tool.

35. The connector of claim 32, wherein said second component is comprised of at least one of a blowout preventer, a riser, a production tree, a tubing head and a running tool.

36. The connector of claim 32, further comprising at least one connector rod that is operatively coupled to said locking mandrel and adapted to indicate a position of said locking mandrel.

38. The connector of claim 32, wherein at least one of said substantially flat areas is axially positioned between said first and second primary shoulders and laterally offset therefrom.

39. The connector of claim 32, wherein each of said plurality of locking segments further comprises:

- a first secondary shoulder on said locking segment that is adapted to engage a first secondary shoulder on said first component; and
- a second secondary shoulder on said locking segment that is adapted to engage a second secondary shoulder on said second component.

40. The connector of claim 32, wherein said first primary locking shoulder and said first surface on said first component are tapered surfaces.

41. The connector of claim 32, wherein said second primary locking shoulder and said second surface on said second component are tapered surfaces.

42. The connector of claim 32, wherein said locking mandrel comprises a plurality of recesses, each of which is adapted to receive a protrusion on said locking segments when said locking segments are in a disengaged position.

43. The connector of claim 32, wherein each of said locking segments is comprised of a downwardly facing surface that is adapted to engage an upwardly facing surface on said locking mandrel when said locking mandrel is actuated to disengage said connector.

44. The connector of claim 32, wherein said locking mandrel is operatively coupled to a primary piston.

45. The connector of claim 44, further comprising a secondary release piston positioned below said primary piston, said secondary release piston adapted to, when actuated, cause said primary piston to move.

46. A connector, comprising:
- a first end adapted to be coupled to a first component;
 - a plurality of locking segments that, when actuated, are adapted to secure said first component to a second component, wherein each of said plurality of locking segments comprises:
 - a first primary locking shoulder that is adapted to engage a first surface on said first component, and
 - a second primary locking shoulder that is adapted to engage a second surface on said second component; and
 - a locking mandrel that, when actuated, is adapted to engage each of said plurality of locking segments at three discrete, spaced apart, substantially flat engagement areas.
47. The connector of claim 46, wherein said first end is threadingly coupled to said first component.
48. The connector of claim 46, wherein said first component is comprised of at least one of a blowout preventer, a riser, a production tree, a tubing head and a running tool.
49. The connector of claim 46, wherein said second component is comprised of at least one of a blowout preventer, a riser, a production tree, a tubing head and a running tool.

50. The connector of claim 46, further comprising at least one connector rod that is operatively coupled to said locking mandrel and adapted to indicate a position of said locking mandrel.

51. The connector of claim 46, wherein each of said plurality of locking segments further comprises:

a first secondary shoulder on said locking segment that is adapted to engage a first secondary shoulder on said first component; and

a second secondary shoulder on said locking segment that is adapted to engage a second secondary shoulder on said second component.

52. The connector of claim 46, wherein said first primary locking shoulder and said first surface on said first component are tapered surfaces.

53. The connector of claim 46, wherein said second primary locking shoulder and said second surface on said second component are tapered surfaces.

54. The connector of claim 46, wherein said locking mandrel comprises a plurality of recesses, each of which is adapted to receive a protrusion on said locking segments when said locking segments are in a disengaged position.

55. The connector of claim 46, wherein each of said locking segments is comprised of a downwardly facing surface that is adapted to engage an upwardly facing surface on said locking mandrel when said locking mandrel is actuated to disengage said connector.

56. The connector of claim 46, wherein said locking mandrel is operatively coupled to a primary piston.

57. A connector, comprising:

a first end adapted to be coupled to a first component;

a plurality of means for securing said first component to a second component, each of said means for securing comprising:

a first primary locking shoulder that is adapted to engage a first surface on said first component; and

a second primary locking shoulder that is adapted to engage a second surface on said second component; and

means for engaging each of said means for securing said first component to said second component at at least three discrete, spaced apart engagement areas.

58. The connector of claim 57, wherein said plurality of means for securing said first component to said second component comprises a plurality of locking segments, each of which are adapted to, when actuated, engage said first and second components.

59. The connector of claim 57, wherein said means for engaging each of said means for securing said first component to said second component comprises a locking mandrel.

60. The connector of claim 57, further comprising a means for actuating said means for engaging each of said plurality of securing means.

61. The connector of claim 60, wherein said means for actuating said means for engaging comprises a piston operatively coupled to said means for engaging.

62. The connector of claim 57, further comprising a secondary release means for disengaging said means for engaging each of the means for securing said first component to said second component.

63. The connector of claim 62, wherein said secondary release means comprises a piston.

64. The connector of claim 57, wherein at least one of said engagement areas is a substantially flat engagement area defined by the engagement of substantially flat surfaces.

65. The connector of claim 57, wherein all of said engagement areas are substantially flat engagement areas defined by the engagement of substantially flat surfaces.

66. The connector of claim 57, wherein at least one of said engagement areas is a tapered engagement area defined by the engagement of tapered surfaces.

67. The connector of claim 57, wherein all of said engagement areas are tapered engagement areas defined by the engagement of tapered surfaces.

68. The connector of claim 57, wherein said first component is comprised of at least one of a blowout preventer, a riser, a production tree, a tubing head and a running tool.

69. The connector of claim 57, wherein said second component is comprised of at least one of a blowout preventer, a riser, a production tree, a tubing head and a running tool.

70. The connector of claim 16, wherein said primary piston is positioned within a body of said connector.

71. The connector of claim 30, wherein said primary piston is positioned within a body of said connector.

72. The connector of claim 44, wherein said primary piston is positioned within a body of said connector.

73. The connector of claim 56, wherein said primary piston is positioned within a body of said connector.

EVIDENCE APPENDIX

Applicants do not rely on any evidence for this appeal.

RELATED PROCEEDINGS APPENDIX

There are no Related Proceedings for this appeal